

an inner spherical shell member positioned inside said outer shell member; and

said inner shell member and said outer shell member being positioned to provide an insulating radial gap between them;

a first port member in said outer shell member for evacuation of said radial gap to a vacuum, and to provide access for filling said inner shell member with hydrogen material; and

a first heating mechanism on said outer shell member for controlling the rate of evaporation of material contained in said inner shell member;

said inner shell member having an outer surface and an inner surface, said outer surface being coated with a low emissivity material;

said outer shell member having an outer surface and an inner surface, said inner surface being coated with a low emissivity material.

Please cancel claim 13.

Please replace claim 14 with the following:

14. (Amended) The lightweight fuel tank as set forth in claim 12 comprising a second heating mechanism on said outer surface of said outer shell member for controlling icing of said fuel tank during use.

Please replace claims 18-30 with the following:

18. (Amended) A stratospheric vehicle having a fuel tank, said fuel tank comprising:

an outer spherical shell member;

an inner spherical shell member positioned inside said outer shell member;

said inner shell member and said outer shell member being positioned to provide an insulating radial gap between them;

said inner shell member having an outer surface and an inner surface, said outer surface being coated with a low emissivity material; and

said outer shell member having a sandwich construction with an inner skin member made of a lightweight metal material, an outer skin member made of a lightweight composite material, and a core member made of a low thermal conduction insulating material.

19. (Amended) The stratospheric vehicle as set forth in claim 18 further comprising a first heating mechanism on said outer shell member for controlling the rate of evaporation of material contained in said inner shell member.

20. (Amended) The stratospheric vehicle as set forth in claim 19 comprising a second heating mechanism on said outer surface of said outer shell member for controlling icing of said fuel tank during use.

21. (Amended) The stratospheric vehicle as set forth in claim 18 wherein said inner skin member is an aluminum material, said outer skin member is a Kevlar material, and said core member is a low density foam material.

22. (Amended) The stratospheric vehicle as set forth in claim 18 wherein said inner shell member is made of an aluminum material and said outer shell member is made of a sandwich of titanium, Kevlar and Nomex materials.

23. (Amended) The stratospheric vehicle as set forth in claim 18 wherein said low emissivity material is a flash of a copper material.

24. (Amended) The stratospheric vehicle as set forth in claim 18 wherein said inner skin member is coated with a low emissivity material.

25. (Amended) The stratospheric vehicle as set forth in claim 24 wherein said low emissivity material is copper.

26. (New) The stratospheric vehicle as set forth in claim 18 further comprising a first port member in said outer shell member for evacuation of said

radial gap to a vacuum, and to provide access for filling said inner shell member with hydrogen material.

15. (Amended) The stratospheric vehicle as set forth in claim 26 further comprising a second port member in said inner shell member for filling said inner shell member with a hydrogen material, said second port member having a valve mechanism.

16. (Amended) The stratospheric vehicle as set forth in claim 18 wherein said inner and outer shell members are connected at three locations, namely two opposing equatorial external support positions and a port member.

17. (Amended) The stratospheric vehicle as set forth in claim 18 wherein said inner and outer shell members of different materials are connected by a friction welded insert member.

18. (Amended) A lightweight fuel tank comprising:  
an outer spherical shell member;  
an inner spherical shell member positioned inside said outer shell member;

19. said inner shell member and said outer shell member being positioned to provide an insulating radial gap between them;

20. a first heating mechanism on said outer shell member for controlling the rate of evaporation of material contained in said inner shell member; and

21. a second heating mechanism on said outer shell member for controlling icing of said fuel tank during use.

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Please cancel claim 31.

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